

# PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number

**Q94096**

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]  
on \_\_\_\_\_

Application Number  
**10/574,588**

Filed  
**April 4, 2006**

Confirmation Number: **3962**  
First Named Inventor  
**Keiichi HIRANO**

Signature  
Typed or  
printed name

Art Unit  
**1618**

Examiner  
**Perreira, Melissa**

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a Notice of Appeal.

The review is requested for the reason(s) stated on the attached sheet(s).  
Note: No more than five (5) pages may be provided.

- ☒ The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

## CORRESPONDENCE ADDRESS

*Direct all correspondence to the address for SUGHRUE MION, PLLC filed under the Customer Number listed below:*

WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

I am the

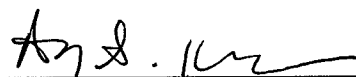
☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71.

☐ Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

☒ attorney or agent of record.  
Registration number 58,902

☐ attorney or agent acting under 37 CFR 1.34.  
Registration number if acting under 37 CFR 1.34 \_\_\_\_\_



Signature

Azy S. Kokabi

Typed or printed name

(202) 293-7060

Telephone number

October 29, 2010

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below\*.

☒ \*Total of 1 form is submitted.

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Docket No: **Q94096**

**Keiichi HIRANO**

Conf. No.: **3962**

Appln. No.: **10/574,588**

Group Art Unit: **1618**

Filed: **April 4, 2006**

Examiner: **Perreira, Melissa**

For: **PROCESS FOR PRODUCING RADIOACTIVE-FLUORINE-LABELED  
COMPOUND**

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

**MAIL STOP AF - PATENTS**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Pursuant to the Pre-Appeal Brief Conference Pilot Program, and further to the Examiner's Final Office Action dated July 29, 2010, Applicant files this Pre-Appeal Brief Request for Review. This Request is also accompanied by the filing of a Notice of Appeal.

Applicant turns now to the one rejection at issue for which review is requested:

1. Claims 1-5 and 11 are rejected under 35 U.S.C. § 103(a) as allegedly obvious over Yamazaki *et al.* (US 5,932,178)("Yamazaki *et al.*") in view of Osaki *et al.* (JP 08-325169)("Osaki *et al.*") and in further view of Coulter *et al.* (US 2,576,264)("Coulter *et al.*").

As recognized by the Examiner, Yamazaki *et al.* do not teach: (1) a process of passing carbon dioxide through the column and (2) a process wherein the formula of the anion-exchange resin is represented by the formula recited in Claims 4 and 11. See Page 3 of the Office Action mailed March 25, 2010. However, such deficiencies are allegedly cured by Osaki *et al.* and in further view of Coulter *et al.* In particular, Osaki *et al.* is relied on for a phosphonium resin and Coulter *et al.* is relied on for a teaching that helium and carbon dioxide are allegedly analogous drying gases/media. See Page 3 of the Office Action mailed March 25, 2010 and page 2 of the Office Action mailed July 29, 2010. On this basis, the Examiner concludes that it would have been obvious to one ordinarily skilled in the art to substitute one inert drying gas, such as the

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

U.S. Application No. 10/574,588 (Q94096)

helium of Yamazaki *et al.* for an equivalent inert drying gas, such as carbon dioxide as in Coulter *et al.* Id. At page 2 of the Office Action dated July 29, 2010, Examiner further contends that the reference to Coulter *et al.* was used to teach that helium and carbon dioxide are used as analogous drying gases/media in the drying process of Coulter *et al.* and thus can be used interchangeably for other processes.

For at least the following reasons, the Examiner has failed to establish a *prima facie* case. Further, any alleged *prima facie* case of obviousness is overcome because the present invention allows for the unexpectedly high production yields of fluorine compound using carbon dioxide gas, when compared to the yields of fluorine compounds produced by the method of Yamazaki *et al.*

First, in view of the deficiencies recognized above for Yamazaki *et al.* and Osaki *et al.* by the Examiner, and previously set forth on the record<sup>2</sup>, neither Yamazaki *et al.* or Osaki *et al.* separately or in combination, teach or suggest all the presently claimed limitations. M.P.E.P. § 2143. Coulter *et al.* do not cure the deficiencies of Yamazaki *et al.* or Osaki *et al.*, and do nothing further to render the claimed invention obvious, because Coulter *et al.* do not reasonably suggest using carbon dioxide gas for the purpose of producing radioactive-fluorine-labeled compounds. Rather, the Examiner's conclusion of obviousness relies almost entirely on impermissible hindsight reconstruction, because the cited references, taken alone, or in combination, do not reasonably suggest using carbon dioxide gas for the purpose of producing radioactive-fluorine-labeled compounds. The Examiner's position is not sufficient to suggest that one skilled in the art would be motivated to combine Yamazaki *et al.* and Coulter *et al.* because the cited references are not related in function, principles or problems solved. Rather, it appears that the Examiner is making conclusions based on the disclosure of the present Application.

In particular, the instant specification, at page 20, lines 17-25, teaches the advantages of using carbon dioxide gas in the resin column. The specification teaches that "by passing carbon dioxide gas through the resin column for labeled-compound synthesis 5, a trace amount of moisture and the dehydrating solvent, such as acetonitrile or dimethylsulfoxide, which remain in

---

<sup>2</sup> See pages 3-6 of Response filed January 5, 2010, and pages 2-5 of Response filed June 23, 2010.

## PRE-APPEAL BRIEF REQUEST FOR REVIEW

U.S. Application No. 10/574,588 (Q94096)

the column, can be removed, and the CO<sub>2</sub> in the resin which has been lost more or less in the first and second steps can be supplemented.” See page 20, lines 17-25. Furthermore, Examples 1-3 of the instant specification show the effects of carbon dioxide gas on different resins, as compared to helium and nitrogen gas. The specification concludes that the process for producing a labeled-radioactive fluorine compound according to the present invention can attain <sup>18</sup>F at a “clearly higher yield than when the inert gas of the Comparative Examples was employed.” See page 27, lines 5-13. Thus, Applicants’ specification is replete with disclosure relating to the advantages of using carbon dioxide gas in the process for producing a radioactive-fluorine labeled compound.

One of ordinary skill in the art, without reading Applicants’ disclosure, would not have been motivated to utilize carbon dioxide gas to recover <sup>18</sup>O water containing <sup>18</sup>F ions. The apparatus of Coulter *et al.* does not utilize an anion-exchange resin and is not used for dry columns which produce radioactive fluoride ions. Rather, Coulter *et al.*, a U.S. Patent issued in 1947, is nonanalogous prior art which would not have been considered by a person skilled in the art, in an improvement for producing radioactive-fluorine labeled compound. Coulter *et al.* discloses an apparatus for *spray drying of food particles*, such as milk or eggs. See Column 1, lines 1-5. As would be appreciated by one of ordinary skill in the art, the technical considerations for producing a radioactive-fluorine labeled compound are completely different to those for drying food particles. As set forth in the Manual of Patent Examining Procedure (“MPEP”), “[t]he examiner must determine what is ‘analogous prior art’ for the purpose of analyzing the obviousness of the subject matter at issue.” MPEP Section 2141.01

Second, the equivalence of helium and carbon dioxide gas for purpose of recovering <sup>18</sup>F was not recognized in the art, as evidenced by U.S. Patent No. 6,827,838 to Hyodo *et al.* (“Hyodo *et al.*”).<sup>3</sup> The teaching of Hyodo *et al.* further supports Applicants’ position that one of ordinary skill in the art would not have substituted carbon dioxide in the claimed process as it contains many drawbacks. In particular, Hyodo *et al.* teaches that chemicals such as carbon dioxide are “not desirable” due to impurity problems and drawbacks regarding the control of

---

<sup>3</sup> Although Hyodo *et al.* was not used as a reference in the existing rejection, the Examiner’s disregard of the teaching in Hyodo *et al.* is improper as Hyodo *et al.* teaches one of ordinary skill in the art would not have substituted carbon dioxide in the claimed process.

## PRE-APPEAL BRIEF REQUEST FOR REVIEW

U.S. Application No. 10/574,588 (Q94096)

flow rate of a  $^{18}\text{F}$  solvent and the clogging of the ion exchange resin column. Col. 1, lines 44-50. The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and the combination yielded nothing more than predictable results to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007). Based on the teaching of Hyodo *et al.*, one of ordinary skill in the art would not have predicted that carbon dioxide gas in a conventional  $^{18}\text{F}$  recovery method would have resulted in high yields of fluorine compound. To the contrary, Hyodo *et al.* teaches away from use of carbon dioxide due to clogging and other drawbacks. When the prior art teaches away from the claimed solution, the Board of Patent Appeals and Interferences has interpreted the Supreme Court's ruling in *KSR* to mean that obviousness cannot be proven merely by showing that a known element could have been modified by routine experimentation or solely on the expectation of success. *Ex parte Whalen* (BPAI 2008).<sup>4</sup> "[I]t must be shown that those of ordinary skill in the art would have had some apparent reason to modify the [art] in a way that would result in the claimed [invention]." *Id.*

Finally, it appears that the Examiner has failed to consider Applicants' arguments of unexpected results because it was not presented in a Rule 132 Declaration that compares the closest prior art. However, a Rule 132 Declaration is not necessary because the instant specification discloses three comparative examples, showing that carbon dioxide has unexpected superior results as compared to helium and nitrogen gas. The closest prior art cited by the Examiner, Yamazaki *et al.* disclose that  $^{18}\text{O}$  water containing  $^{18}\text{F}$  is introduced into a resin, acetonitrile is further introduced into the resin column, followed by helium gas to sufficiently dry the column. Col. 20, lines 18-55. The collection rate using the helium gas as disclosed by Yamazaki *et al.* is low, compared to carbon dioxide. Specifically, Tables 1-3 of the instant application compares the yield of  $^{18}\text{F}$  when different resins were used with carbon dioxide gas,

---

<sup>4</sup> The Supreme Court stated that "because the claimed subject matter may involve more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for the improvement... Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there is an apparent reason to combine the known elements in the fashion claimed by the patent at issue. *KSR* at 1740-41.

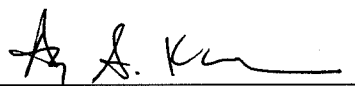
**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

U.S. Application No. 10/574,588 (Q94096)

helium gas, or nitrogen gas. As shown in Table 1, the yield values using carbon dioxide was high (94.8%) as compared to using helium gas (83.7%) and nitrogen gas (85.9%). Thus, one of ordinary skill in the art would not have expected, nor reasonably predicted, that the gas utilized in the claimed process would produce unexpectedly high yields of fluorine compound, considering the yields disclosed in the art for methods using different gases were significantly lower. As Applicants have shown unexpected superior results compared to helium gas (the closest prior art) in the specification, Applicants respectfully request the Examiner to consider such evidence of unexpected results.

Withdrawal of the rejection is respectfully requested.

Respectfully submitted,



Azy S. Kokabi  
Registration No. 58,902

**SUGHRUE MION, PLLC**  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

Date: October 29, 2010